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limestones of Northwest Kashmir, and the palæozoic and metamorphic rocks of the same district, as well as the tertiaries of the lower Kishanganga valley and Kházán. He also describes and figures the entire lower jaw of *Pachygonia incurvata* Huxley, a labyrinthodont from the Panchet rocks, and portions of the mandibles of *Gonioglyptus huxleyi* Lydekker, and *Glyptognathus fragilis* Lyddeker, both labyrinthodonts from the same group.——Professor Whitney has recently published a work on the climatic changes of later geological times, in which he maintains that our globe is gradually becoming desiccated —a process that commenced in cretaceous times. The increasing dryness, within historical times, of Persia, Arabia, the countries around the Aral and Caspian, North Africa and Greece, is proved by abundant facts. Setting aside the removal of forests, and the effects of the glacial period, Professor Whitney refers this decline in precipitation to a diminution of the earth's temperature consequent on lessened solar radiation.——The May number of the *Geological Magazine* contains contributions to the palæontology of the Yorkshire oolites, by W. H. Hudleston, with descriptions of a new genus and two new species of gasteropods.——To the same number Professor Marsh contributes an article upon the wings of Pterodactyls. The "pteroid bone" is maintained to be a part of the first digit; it supported a membrane extending from near the shoulder to the wrist, and was articulated to the "lateral carpal," which is probably the metacarpal of the first digit. Thus the wing finger is the fifth, not the fourth, since the pteroid bone is upon the radial side.——Dr. W. Flight continues his history of meteorites, and the Rev. B. Irving his argument upon the classification of the European rocks known as Permian and Trias. ——In the same magazine Mr. H. H. Howorth considers the evidence of the loams and brick-earths in favor of a post-glacial flood. He believes that the Diluvium of Russia was continuous with the loam of France and Spain until the outpouring of the volcanic mud, which, swept over and mingled with it by the great flood, constitutes the loess. Patches of this loam, occupying valleys in France, Britain, etc., remain undisturbed, and form brick-earth, while the remainder has been altered and its pebbles rolled. The glacial period had passed, and ice would have scooped out the soft loam from the valleys, so that the result could only have been accomplished by a great flood.

MINERALOGY.[1]

A PHOSPHORESCENT VARIETY OF LIMESTONE.—Through the courtesy of Professor E. D. Cope, the writer has had an opportunity of examining a remarkable substance recently found in one of the mountain mines of Utah, near Salt Lake city. It is a white rock which phosphoresces with a lurid red light whenever struck or scratched with a hard substance, and on that account has been called by the miners, *Hell-fire rock*.

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[1] Edited by Professor H. CARVILL LEWIS, Academy of Natural Sciences, Philadelphia, to whom communications, papers for review, etc., should be sent.

It proves upon examination to be an almost perfectly pure carbonate of lime, containing occasionally slight impurities of iron, etc. It is a loose grained, white, crystalline limestone, the grains of which are but slightly coherent, giving the rock the appearance of a soft sandstone. Upon slight abrasion in the hand, it crumbles to form a coarse, calcareous sand. Under the microscope the rock appears as a loose mass of irregular, angular grains, which are nearly transparent, and which have a luster resembling that of alum. Portions of the rock are colored slightly yellow by oxide of iron.

Its phosphorescent properties are very remarkable, entitling it to rank as a new variety of limestone. It was long ago noticed by Becquerel that some limestones were slightly phosphorescent, but so far as known, no other limestone possesses this property in a degree at all approaching that now described, the phosphorescence of which is nearly as strong as that of fluor spar.

Phosphorescence is developed when the rock is either struck, scratched or heated. Upon using metal, glass or any other hard substance to strike or to scratch it, a deep red light is emitted, which continues sometimes for several seconds after the blow. Rubbing with other fragments or grinding in a mortar developed a white light. The most remarkable phosphorescence is developed by heating a fragment of the limestone in a glass tube over a flame. It then glows with a deep red light which lasts for a minute or more after withdrawing the flame. The color of the light emitted resembles that of a red hot body. Several seconds before dying out, the light becomes white or bluish-white. Upon cooling and subsequent heating, phosphorescence is again developed in the same fragment, but much more feebly and for a shorter period, and after two or three such heatings, its phosphorescence is destroyed.—*H. C. L.*

PROCEEDINGS OF THE MINERALOGICAL SOCIETY OF GREAT BRITAIN AND IRELAND.—The Mineralogical Society of Great Britain and Ireland, instituted in 1876, holds general meetings in London two or three times a year, and an annual meeting at the time and place of the British Association meeting. Local meetings may also be held at any time and place. Its proceedings are issued as occasion may demand. The number before us, dated May, 1882, contains the following papers, read at the meetings of December 23, 1880, and September 2, 1881.

Minerals new to Britain.—Professor Heddle contributes analyses of the following British minerals: Halloysite, fibrolite, martite (apparently altered magnetite), turgite (pseudomorphous after pyrite), xonaltite (resembles a granular pink chalcedony), schiller spar (mixed with serpentine), hydrous saussurite (?), tachylite (a fused dolerite), dolerite, pitchstone, spherulite, paulite (hypersthene), zoisite, idocrase, andalusite, withamite, olivine, pinite, gigantolite, chlorophyllite, scapolite, pyrrhotite, pyromorphite, aragonite, reddle, lydian stone, hornstone, chert, lignite, ozocerite. It is to be regretted that a careful microscopical examination, especially in the case of the silicates, did not precede each analysis.

On some ill-determined minerals.—Professor Heddle in this paper again gives new names to species which he himself acknowledges are ill-determined and doubtful.

Plynthite is the name given to a red bole, which falls to pieces in water, and which "probably has resulted from a bed of earth which has been covered and burnt by a trap stream."

Uigite is a zeolite occurring in radiated, sheafy plates at Uig, Skye, which is but partially described. It is perhaps mesolite.

Ferrite is an alteration product of pyroxene, which occurs in brown crystals, soft enough to be bruised by the nail. (The name has already been appropriated by Vogelsang to designate a still worse species, the hydrous oxide of iron found in many rocks.)

Craigtonite. This name is given to a thin, soft coating of blue-black color adhering to red granite. An analysis was made by putting the mineral, together with the attached granite, in acid and attempting to dissolve the former. The result followed that the granite was attacked, as would be expected from such a method of analysis. The author wisely refrained from reducing the composition obtained to a formula. The coating is evidently wad.

Ellonite. "This is an *ad interim* name given to a pale, dull yellow, somewhat unctuous powder, which I got out of small nests, occurring rarely in perfectly fresh, recently blasted gneiss." The analysis proves that it is a mixture of sand and clay.

It would be well if Professor Heddle would follow the advice given in the preface to the third appendix to Dana's Mineralogy.

A peculiar copper ore from New South Wales.—Professor A. Liversidge describes an ore which, though homogeneous in appearance, is probably an intimate mixture of quartz and chalcocite.

On the occurrence of Linarite in Slag.—P. Dudgeon finds well-defined crystals of linarite in the cavities of the slag of an ancient Roman lead smelting place. He supposes that they were formed subsequently to the smelting, during long exposure to the air.

Some artificial forms of Silica.—J. I'anson and E. A. Parkhurst contribute some interesting results of a course of experiments in the artificial production of agates. They divide banded agates into those in which the crystalline mass is outside of the bandings, and those in which it is inside, the first showing growth from within outwards, the second from without inwards. They produce both of these forms artificially, by precipitating an alkaline solution of silica by acid. The acid is introduced through a pipette to the bottom of a vessel containing a solution of silica and an alkaline carbonate. As the stream of bubbles arise, silica is deposited, and in a few minutes a tube is formed, reaching from the bottom to the surface of the solution. The tube is at first thin, but constantly grows in thickness by the deposition of silica on the outside, thus forming a series of bands. The authors suggest that natural agates are formed by a somewhat similar chemical process. By introducing oxide of iron in the solution, they have closely imitated certain jaspers and moss agates.

Description of the Geological Map of Sutherland.—Professor Heddle describes a map published in a former number.

Specular Iron in a Copper Works Slag.—W. Terrill has found hexagonal plates of specular iron in a copper works slag.

LERNILITE, AND OTHER SUPPOSED NEW GERMAN MINERALS.—In a recent paper by Schrauf in the *Zeitschrift für Krystallographie*, etc., upon the magnesian silicates of Southern Bohemia, a number of new names are proposed for various substances allied to serpentine, most of which are products of alteration. Every mineralogist knows the numerous substances found with serpentine in a more or less altered condition, but every one will regret that Professor Schrauf has thought it necessary to give distinctive names to these substances. Superfluous names, if retained in the science, will cause determinative mineralogy to become burdensome. Enophite, lernilite, kelyphite, siliciophite, berlauite, schuchardite, hydrobiotite, parachlorite, and protochlorite are the names here introduced to designate substances most of which are already well known under more simple designations.

A curious mistake is made in the name "lernilite." This is the name he applies to the vermiculite of Lenni, Delaware county, Pa., already described by Professor Cooke. The name Lenni having been misspelt in Professor Cooke's paper, the error is perpetuated by Schrauf in his "lernilite." As the term "lennilite" has already been appropriated for a variety of orthoclase from the same locality, Professor Schrauf must find another name for the mineral. "Hydrobiotite" is also a term previously used.

MINERALOGICAL NOTES.—F. W. Clarke and N. W. Perry in the *American Chemical Journal* for June describe a massive purple mineral from Colorado, which appears to be a decomposed fluor spar mixed with calcite. An analysis is given, and the name "*gunnisonite*" is proposed. Certainly no cause has been shown for assigning this new name to an impure and partially studied substance. —— According to Dr. Heddle, a schist containing andalusite crystals is used in Scotland for millstones. The hard crystals protrude from the surface of the stone and act as grinding teeth.—— Dr. M. E. Wadsworth has found picotite, a chrome spinel, in the basalt of Mt. Shasta, California. —— The Smithsonian Report for 1880, contains an excellent summary of recent mineralogical discovery, prepared by the late George W. Hawes. —— O. A. Derby in a recent number of the American Journal of Science, describes the modes of occurrence of the diamond in Brazil. Diamonds occur in gravel, in clay or decomposed rock, in a compact quartzite conglomerate, and in their original matrix in veins traversing the hydromica schist and itacolumite formation. The diamond-bearing veins are decomposed hydrômica schists underlying the itacolumite. —— By making use of the polarizing microscope of Bertrand, Descloiseaux has been able to determine the crystallographic and optical characters of nadorite, and has shown that the crystals are twins. —— Rocksalt of a bright green color has been found in the Douglashall shafts. It contained 59 per cent. of potassium chloride with enclosed crystals of potassio-ferrous chloride ($2KCl$, $FeCl_2$, $2H_2O$), for which Ochsenius has proposed the name "*douglasite*." —— A specimen of chalcedony recently brought by Mr. P. Rathbone, from Monte Video, contains an ounce of liquid, with a large bubble. —— An apple green, clayey substance occurs in crevices in the weathered granite of Upper Austria, which becomes brittle upon exposure to the air, and falls to pieces in water. It is essentially a hydrous silicate of alumina, and appears to be similar to the variety of fuller's earth, known as *razumoffskin*. —— O. Leudecke has studied the fireblende (pyrostilpnite), of Andreasberg, and finds its composition identical with that of pyrargyrite. As the former is monoclinic, and the latter rhombohedral, $Ag_3 SbS_3$ is proved to be dimorphous.

MICROSCOPY.[1]

THE AUGUST MEETINGS.—The Elmira meeting of the American Society of Microscopists, August 15-18, and the Montreal meeting of the A. A. A. S., August 23-30, will both be occasions of unusual interest, and all persons interested should attend one or both if possible. At Montreal the new section of histology and microscopy will meet for the first time, as a full section and with the same standing as the oldest and most important sections of the association.

EYE PROTECTORS.—Nearly every one who has used the monocular microscope to any extent has experienced a peculiar fatigue, due to the unequal use of the two eyes, which is felt most in the unused eye, and which is about equally troublesome whether that eye be kept open and confused by a useless vision, or closed and irritated by the sudden and frequent changes from use to disuse and by the unnatural muscular efforts required to accomplish this. In most cases, as is well known, if this process be continued long enough, the disused eye becomes comparatively worthless, and the person works almost exclusively with one eye, whether with the microscope or without it. A similar effect has been noticed in the habitual use of the telescope and other optical instruments. Persons are often obliged, after some years, to practice using the left eye chiefly, for the sake of restoring as far

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[1] This department is edited by Dr. R. H. WARD, Troy, N. Y.